1

```
caros := {[{{[1, 2], [3, 1]}, {[1, 4], [2, 3]}, {[2, 3], [3, 1]}, {[1, 4], [3
, 1]}, {[2, 3], [3, 2]}, {[1, 2], [2, 3]}, {[1, 3], [3, 2]}, {[1, 4], [2, 1]},
{[2, 3], [3, 4]}, {[2, 2], [3, 4]}, {[1, 2], [2, 4]}, {[1, 2], [2, 1]}, {[1, 2]
, [3, 4]}, {[2, 1], [3, 4]}, {[2, 1], [3, 2]}, {[1, 3], [2, 1]}, {[1, 3], [3, 4
]}, {[1, 3], [3, 1]}}, {{[1, 4], [2, 3], [3, 1]}, {[1, 2], [2, 3], [3, 4]}, {[1
, 3], [2, 1], [3, 2]}, {[1, 2], [2, 1], [3, 4]}}

 [{{[1, 2], [3, 1]}, {[1, 4]
, [2, 3]}, {[2, 3], [3, 1]}, {[1, 2], [2, 3]}, {[2, 3], [3, 4]}, {[2, 2], [3, 4
]}, {[1, 2], [2, 4]}, {[1, 2], [3, 4]}, {[1, 1], [2, 3]}, {[1, 1], [3, 3]}, {[2
, 2], [3, 1]}, {[1, 4], [3, 3]}, {[2, 4], [3, 1]}, {[1, 1], [2, 2]}, {[1, 2], [
3, 3]}, {[1, 1], [2, 4]}, {[1, 1], [3, 4]}, {[2, 2], [3, 3]}}, {{[1, 2], [2, 3]
, [3, 4]}, {[1, 1], [2, 3], [3, 4]}, {[1, 2], [2, 4], [3, 1]}, {[1, 1], [2, 2]
, [3, 3]}

 [{{[2, 3], [3, 1]}, {[1, 4], [3, 1]}, {[2, 3], [3, 2]}, {[1, 3], [
3, 2]}, {[2, 3], [3, 4]}, {[2, 2], [3, 4]}, {[1, 3], [3, 4]}, {[1, 3], [3, 1]}
, {[1, 1], [2, 3]}, {[2, 2], [3, 1]}, {[2, 4], [3, 1]}, {[1, 1], [2, 2]}, {[1,
1], [2, 4]}, {[1, 4], [2, 2]}, {[1, 3], [2, 2]}, {[1, 1], [3, 2]}, {[1, 3], [2
, 4]}, {[1, 4], [3, 2]}}, {{[1, 4], [2, 2], [3, 1]}, {[1, 1], [2, 3], [3, 2]},
{[1, 3], [2, 4], [3, 1]}, {[1, 3], [2, 2], [3, 4]}}]];
```

Meta-Schönhardt's

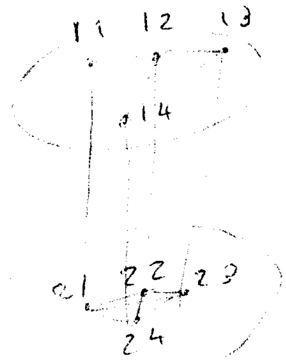
(triangulations of the Boundary of $\Delta_2 \times \Delta_3$ which can not be extended to a full triangulation)

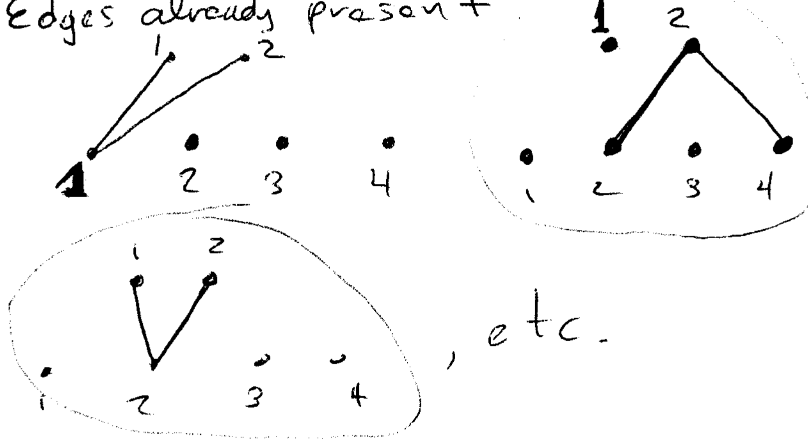
$\Delta_2 \times \Delta_n$

what is known about the secondary?

2

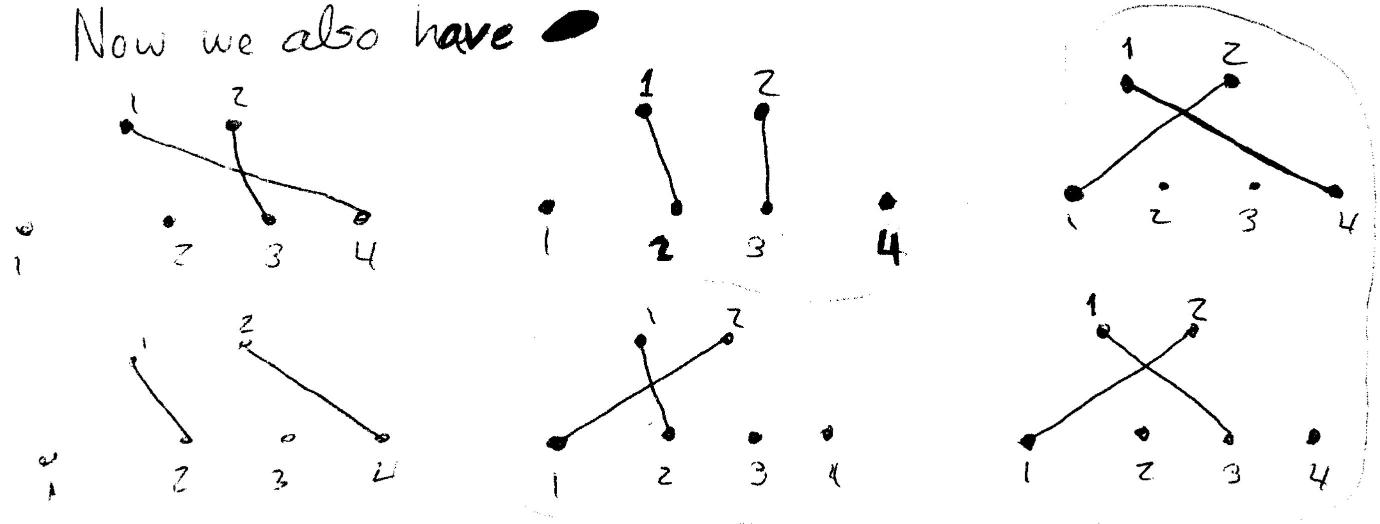
Edges already present



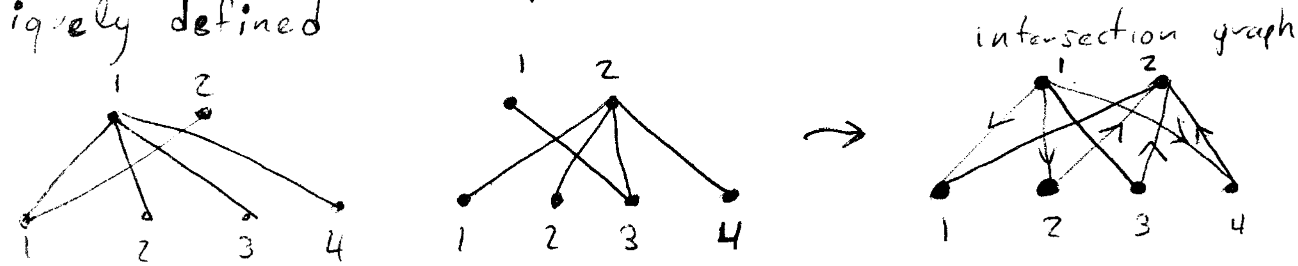


, etc.

Now we also have



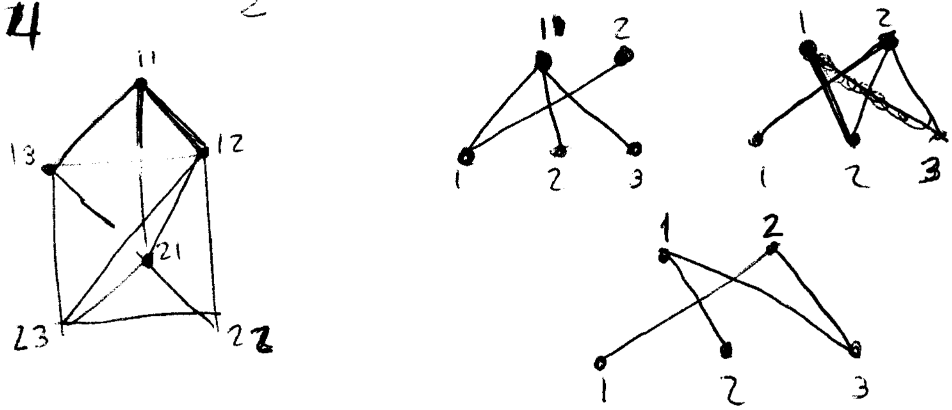
Now we build the triangulation!!! it must be uniquely defined



Triangulation of $\Delta_1 \times \Delta_3$ induces a triangulation of the Boundary.

$\Delta_1 \times \Delta_2$ Δ_3 can this be used as guides?

4 2

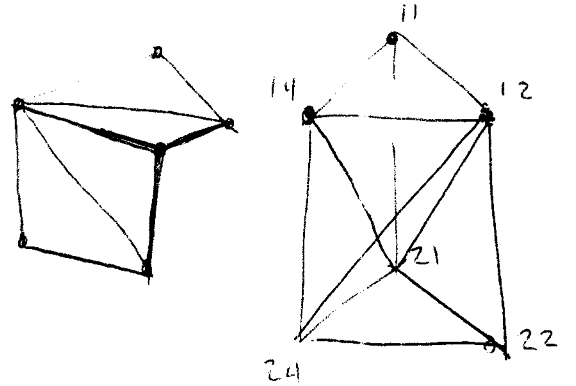


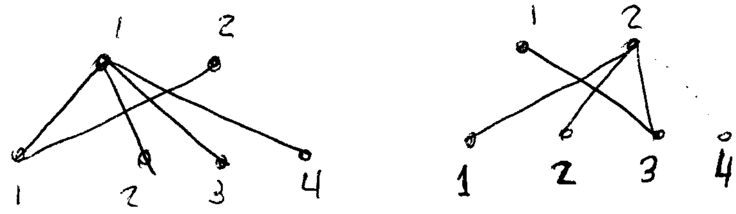
3

But which point is required → to complete the **simplices**...

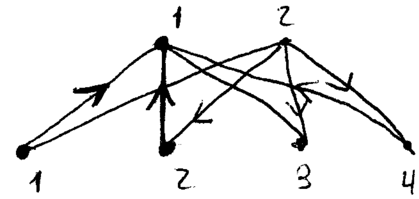
solo hay dos opciones (1,4) o (2,4)...

pero cuales...?



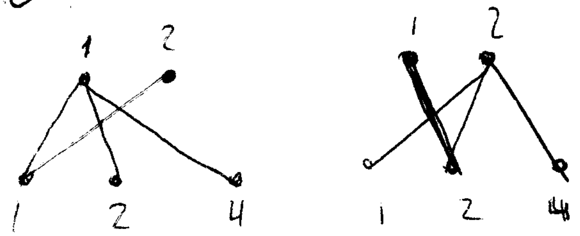


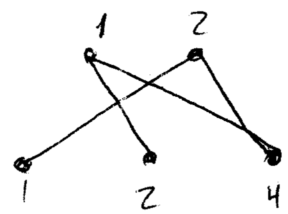
intersecting



pero podria ser (1,4)?

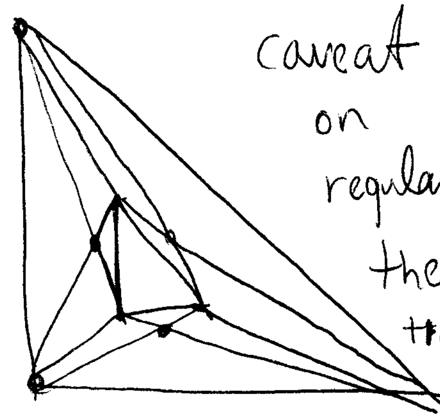
gives



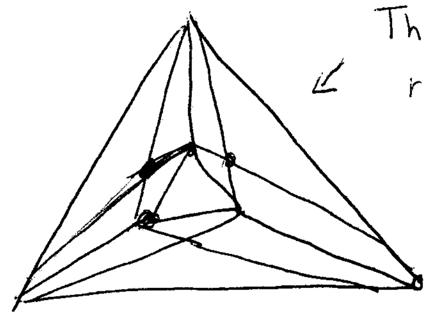


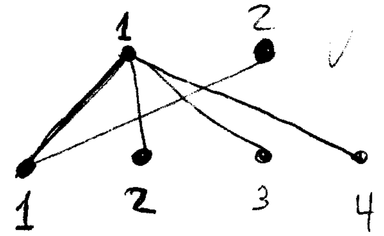
solo hay una triangulación de $\Delta_1 \times \Delta_3$ up to symmetry.

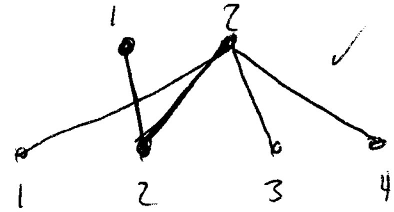
caveat: on regularizing the triangulation



This is regular....





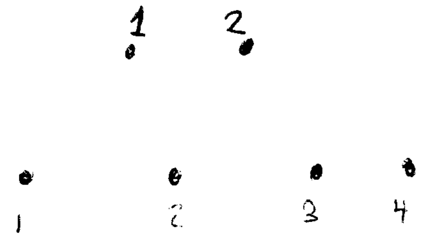


I need two more. **4-simplices**

Each is given by 3 diagonals.

$\binom{6}{3} = \frac{\cancel{6}}{3!}$

$4 \cdot \cancel{5} = 20$ possibilities to select 3 diagonals.



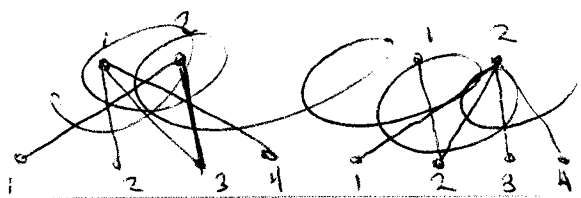
4	1
3	2
2	3
1	4

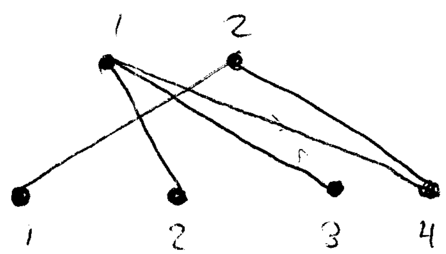
Combinations on where are the vertices in floors 1-2

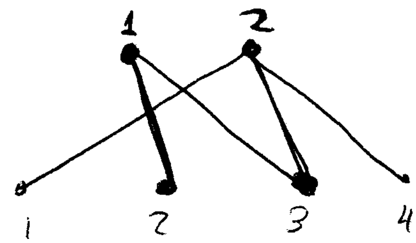
{12, 13, 14}

[redacted]

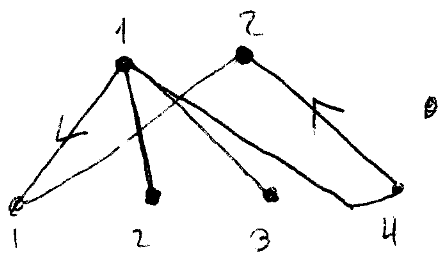
{21, 23, 24}

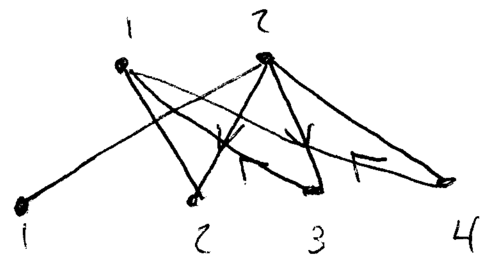






intersections with above ...





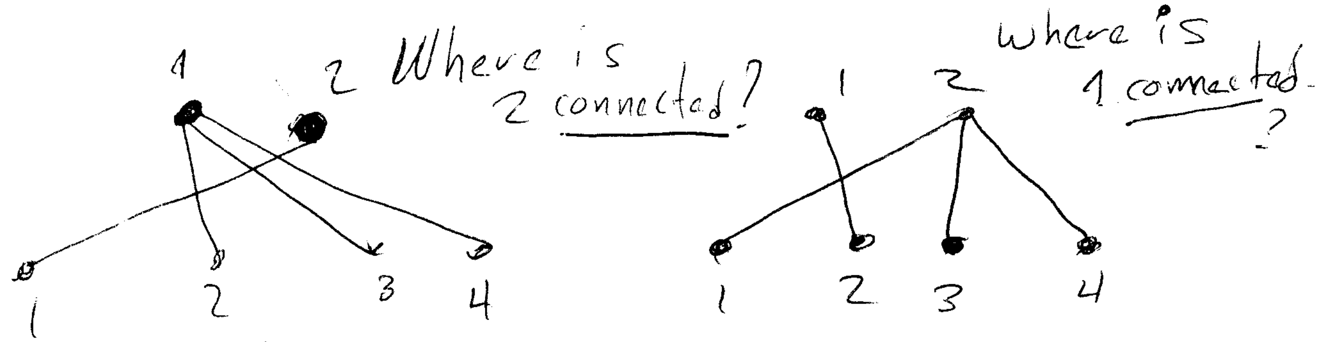
HOW CAN YOU GENERALIZE THIS PROCESS???

5

$6 \leftarrow \binom{4}{2}$

~~4~~-simplices.

I guess the question is:



The best way to know is to look at $\Delta_1 \times \Delta_2$ facets... I don't see any other rule.

Now you must construct ~~2~~ more of this. for the other copies of $\Delta_1 \times \Delta_3$. Then 4 copies for $\Delta_2 \times \Delta_2$'s.

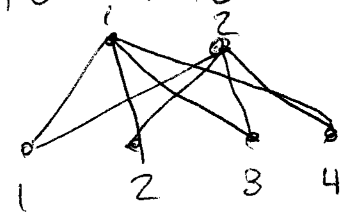
Finally project it ~~down~~ inside

12
24
36

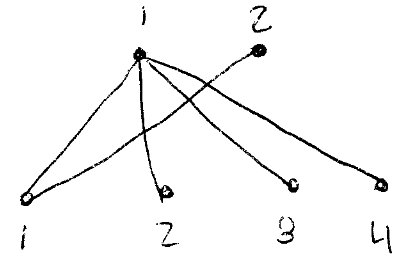
Wouldn't it be simpler if you just try all combinations...(?)

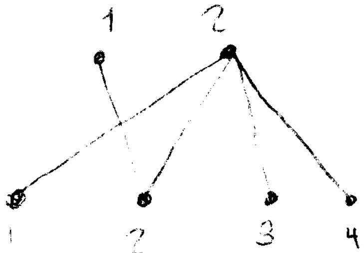
$108^4 \cdot (24)^3$ ... no way it will finish...

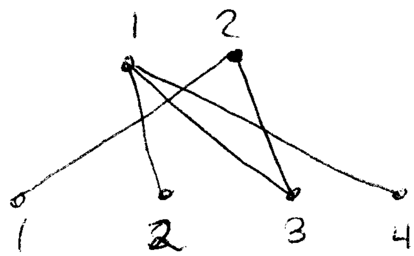
⑥ OK, according with the computer, the triangulation of $T_1 \times T_3$

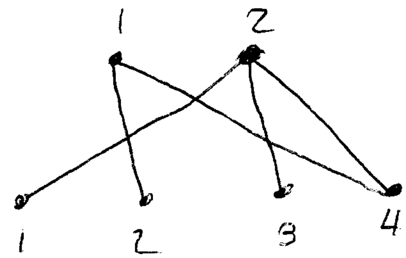


is given by









$T_2 \times T_3$ has 7 facets, we must choose one to do the Schlegal diagram....

$X_1 \geq 0$ is a $T_1 \times T_3$ facet. all the other equations are $\quad -X_1 \leq 0$

$$\begin{array}{ll} X_2 \geq 0 & X_5 \geq 0 \\ X_3 \geq 0 & X_1 + X_2 \leq 1 \\ X_4 \geq 0 & X_3 + X_4 + X_5 \leq 1 \end{array}$$

$(y_1, y_2, y_3, y_4, y_5) = y_F$

A vertex is "beyond" $X_1 \geq 0$ if $y_1 < 0$ but y_F satisfies all the other inequalities

How about $y_F = (-1, \frac{1}{3}, \frac{1}{3}, \frac{1}{3}, \frac{1}{3})$

it seems it would work ... now lets compute the new coordinates for the

(?) points $\{5, 6, 7, 8\}$ the transformation is given by the formula.

$$P(x) = y_F + \frac{-1}{-x_0 - 1}(x - y_F)$$

But for the $\bar{x}$'s we use we get

$$\boxed{y_F + \frac{1}{2}(x - y_F)} = P(x).$$

$$\cancel{\left(-1, \frac{1}{3}, \frac{1}{3}, \frac{1}{3}, \frac{1}{3}\right) + \frac{1}{2}(x - (1}$$